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10/577,049	12/12/2006	Laurent Labrousse	289852US0PCT	2322

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EXAMINER	
HAILEY, PATRICIA L	

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/577,049	LABROUSSE ET AL.	
	Examiner	Art Unit	
	PATRICIA L. HAILEY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *16-19 and 27-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 20-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/24/06; 07/07/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Election/Restrictions

1. Applicant's election with traverse of Group 1, claims 1-15 and 21-26 in the reply filed on October 19, 2009 is acknowledged. The traversal is on the ground(s) that the Examiner has failed to explain why each group lacks unity with the others. This is not found persuasive because for unity of invention, each invention must encompass the special technical feature. As stated in the restriction requirement, at least claim 1 has been shown to be anticipated by the prior art. Therefore, at least claim 1 does not appear to have an inventive concept, and thus, cannot encompass a special technical feature. Further, because at least claim 1 has been shown to be anticipated by the prior art, it cannot be considered to define a contribution made over the prior art.

The requirement is still deemed proper and is therefore made FINAL.

However, as a result of the Examiner's reconsideration of the instant claims, claim 20 (Group III) will be examined along with elected Group I (claims 1-15 and 21-26).

Claims 16-19 and 27-30 are hereby withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected process for manufacturing a structure, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 19, 2009.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on April 24, 2006.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. ***Claims 1-4, 9-12, 14, 15, and 21-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogino et al. (U. S. Patent No. 6,436,542).***

Ogino et al. teach a multilayer structure which functions as a photocatalyst, said structure comprising a substrate and formed thereon a film mainly comprising titanium oxide and having photocatalytic activity, which comprises sputtering a conductive sinter target obtained by sintering a mixture of particles of titanium oxide and particles of at least one metal oxide selected from, inter alia, niobium oxide, tantalum oxide, vanadium oxide, and zirconium oxide, in an atmosphere capable of having a regulated vacuum to form the film mainly comprising titanium oxide and having photocatalytic activity on the substrate (**claims 1 and 10**). See col. 2, lines 22-35 of Ogino et al.

The film mainly comprising titanium oxide is obtained by sputtering in a surrounding gas such as an inert gas (e.g., argon), or a mixed gas comprising an inert gas and oxygen (**claim 11**). See col. 2, lines 36-47 of Ogino et al.

Exemplary substrates include glass (col. 4, lines 33-44); when a glass plate is used as a substrate, a primer film serving to prevent alkali components of the substrate from dissolving in the titanium oxide film is disposed between the substrate and the titanium oxide film (**claims 14, 15, and 25**). "From the standpoint of further improving anti-fouling properties, it is preferred to partly or wholly coat the titanium oxide film of the present invention with a hydrophilic film." See col. 4, lines 46-55 of Ogino et al.

In Figure 1 of Ogino et al., a multilayer structure is depicted, wherein a glass substrate, a primer film comprising silicon dioxide, a titanium oxide film having photocatalytic activity, and a hydrophilic film are shown (**claims 1, 14, 15, and 25**). See also col. 5, lines 1-22.

Regarding claims **2-4 and 12**, Ogino et al. teach "silicon films or films containing silicon dioxide as the main component" as examples of the hydrophilic film. See col. 6, lines 26-32 of Ogino et al.

The limitation "has been deposited by room temperature vacuum sputtering" recited in **claim 12** is considered a product-by-process limitation; "[A]ny difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner

has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show that the same is a process of making." In re Brown, 173 U.S.P.Q. 685 and In re Fessmann, 180 U.S.P.Q. 324.

Regarding **claim 9**, Ogino et al. teach a hydrophilic SiO_2 film having a thickness of 10 nm. See Table 2 of Ogino et al.

Regarding **claims 21-24**, Ogino et al. teach, in the formation of the photocatalytically titanium oxide film, forming a molded product of, for example, titanium oxide and niobium oxide, and degreasing and burning the molded product (col. 5, lines 46-61; "heat treatment"), and employing magnetron sputtering (col. 6, lines 3-16).

In view of these teachings, Ogino et al. anticipate claims 1-4, 9-12, 14, 15, and 21-25.

5. Claims 1-5, 9-11, 13-15, 20, 21, 25, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Doushita et al. (U. S. Patent No. 6,576,344).

Doushita et al. teach a photocatalyst article comprising a photocatalyst film formed on a substrate (col. 9, lines 13-16), and having an overcoat layer formed on top of the photocatalyst film, wherein the overcoat layer may be selected from among

silicon oxide, aluminum oxide, titanium oxide, zirconium oxide, and cerium oxide (col. 10, lines 20-28; **claims 1-5**).

Regarding **claim 9**, Doushita et al. teach that the overcoat layer preferably has a thickness of 0.1 to 50 nm, see col. 14, lines 1-7.

Regarding **claim 10**, Doushita et al. teach that the photocatalyst film contains an oxide semiconductor (e.g., titanium oxide) and a compound which contains at least one type of element selected from, inter alia, V and Nb, see col. 5, lines 14-30.

Regarding **claim 11**, Doushita et al. teach that the photocatalyst film is made using methods such as sol-gel methods, see col. 5, lines 63-65 of Doushita et al.

Regarding **claims 13-15, 25, and 26**, Doushita et al. teach that an alkali-blocking film comprising silicon oxide and zirconium oxide with a zirconium oxide content of 1 weight % ore more and 30 weight % or less, which is especially preferable, may be provided on the substrate (e.g., glass), and that, when a glass material containing an alkali metal is to be used as the substrate, an alkali-blocking film is provided on the glass substrate to prevent lowering of crystallinity of the titanium oxide film, see col. 4, lines 18-58 of Doushita et al.

Regarding **claim 20**, Doushita et al. teach that the photocatalyst article is suitable in anti-fogging, anti-soiling articles, which are suitable as window glass, mirrors, lenses, sheets, showcases, etc., used for construction, vehicles, etc. See col. 1, lines 12-26 of Doushita et al.

Regarding **claim 21**, Doushita teaches that, after forming the photocatalyst film on the substrate, the substrate is dried and thereafter heat treated if necessary, to achieve densification, and improvement of the crystallinity of the titanium oxide. See col. 9, lines 52-58 of Doushita et al.

In view of these teachings, Doushita et al. anticipate claims 1-5, 9-11, 13-15, 20, 21, 25, and 26.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 13, 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogino et al. (U. S. Patent No. 6,436,542) in view of Boire et al. (U. S. Patent No. 6,103,363).

Ogino et al. is relied upon for its teachings in the above 102(b) rejection of claims 1-4, 9-12, 14, 15, and 21-25. Although this reference teaches a primer film serving to prevent alkali dissolution underlying the titanium oxide film, this reference does not explicitly teach or suggest that the underlayer assists in the crystallization in the anatase form of the photocatalytic upper layer (**claims 13 and 26**).

Further, regarding **claim 20**, Ogino et al. teach that the structures are "applicable to various articles…", such as window glasses for buildings, mirrors, etc. (col. 1, lines 13-26 of Ogino et al.), but does not specifically disclose the term "glazing".

Boire et al. teach a structure similar to that of Ogino et al., having a substrate provided on at least one of its faces with a coating having a photocatalytic property containing at least partially crystalline titanium oxide, and also, between the substrate and the coating, one or a number of thin layers with a different or complimentary

function to that of the coating. Layers with an anti-static, thermal, or optical function or promoting the crystalline growth of TiO_2 in the anatase or rutile form (**claims 13 and 26**) or of layers forming a barrier to the migration of certain elements originating from the substrate, in particular forming a barrier to alkali metals and very particularly to sodium ions when the substrate is made of glass. See col. 5, lines 21-30 of Boire et al.

It would have been obvious to one skilled in the art to modify the teachings of Ogino et al. by incorporating therein an underlayer with an anti-static, thermal, or optical function or promoting the crystalline growth of TiO_2 in the anatase or rutile form, motivated by the teachings of Boire et al.

With respect to **claim 20**, Boire et al. teach that it is known in the art to choose titanium oxide "to manufacture a glazing", see col. 1, lines 6-37 and col. 1, line 56 to col. 2, line 4.

Motivated by the teachings of Boire et al., the skilled artisan would have found it obvious that the structure of Ogino et al. would suitably function as a glazing.

10. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doushita et al. (U. S. Patent No. 6,576,344).

Doushita et al. is relied upon for its teachings in the above 102(b) rejection of claims 1-5, 9-11, 13-15, 20, 21, 25, and 26. Although this reference teaches an overcoat layer comprising silicon oxide, aluminum oxide, titanium oxide, zirconium

oxide, and cerium oxide (col. 10, lines 20-28), the reference does not each or suggest the claimed atomic ratios as recited in **claims 6-8**.

However, Doushita et al. teach that the overcoat layer preferably contains 50% by weight or more of silicon oxide (col. 10, lines 27-28). From this teaching, it would have been obvious to the skilled artisan to determine optimal weight percents of silicon oxide, zirconium oxide, and aluminum oxide in the overcoat layer, and from these percentages, determine the atomic percentages of Al, Si, and Zr, and obtain atomic ratios of these components, comparable to those recited in **claims 6-8**.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is (571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICIA L. HAILEY/
Primary Examiner, Art Unit 1793
January 4, 2010